IN THE CLAIMS:

Please add the following claims:

74. (new) A substrate processing apparatus comprising:

a process chamber comprising a substrate support adapted to support a substrate in the process chamber;

a ceiling above the support, the ceiling comprising a gas distributor to introduce a gas into the chamber, and the ceiling having an aperture therein and a window exposed through the aperture;

a gas energizer adapted to energize the gas;

a process monitoring system adapted to detect a radiation transmitted through the window; and

an exhaust adapted to exhaust the gas from the chamber.

75. (new) An apparatus according to claim 74 wherein the aperture has an aspect ratio that is sufficiently large to reduce deposition of process residues on the window.

76. (new) An apparatus according to claim 74 wherein the aperture has an aspect ratio of from about 1:1 to about 12:1.

77. (new) An apparatus according to claim 76 wherein the aperture has an aspect ratio of from about 0.25:1 to about 3:1.

78. (new) An apparatus according to claim 74 wherein the aperture has a diameter or width of from about 0.1 to about 50 mm, and a height of about 0.5 to about 500 mm.

79. (new) An apparatus according to claim 74 wherein the gas distributor is adapted to introduce a gas comprising a cleaning gas.

80. (new) An apparatus according to claim 79 wherein the gas distributor is adapted to introduce the cleaning gas into the chamber to clean surfaces in the chamber.

81. (new) An apparatus according to claim 79 wherein the gas distributor is adapted to introduce a gas adapted to clean surfaces in the chamber and process a substrate.

82. (new) An apparatus according to claim 74 comprising a mask overlying the window.

83. (new) A apparatus according to claim 74 further comprising an electrical field source that is adapted to couple electrical energy to the window to reduce deposition of the process residues on the window.

84. (new) An apparatus according to claim 74 further comprising a magnetic field source adapted to provide a magnetic flux across the window to reduce deposition of process residues on the window.

85. (new) A method of processing a substrate in a process chamber, the method comprising:

(a) placing the substrate in the process chamber;

(b) providing a gas into the process chamber through a ceiling of a process chamber, the gas being adapted to process the substrate and clean surfaces in the chamber;

(c) monitoring a radiation transmitted through a window exposed through an aperture in the ceiling of the chamber; and

(d) exhausting the gas from the process chamber.

86. (new) A method according to claim 85 comprising monitoring a radiation transmitted through a window exposed through an aperture having an aspect ratio that is sufficiently large to reduce deposition of process residue on the window.

87. (new) A method according to claim 85 comprising directing an incident light beam through the window to be incident on the substrate and measuring a property of a reflected light beam that is reflected from the substrate and transmitted through the window.

88. (new) A method according to claim 84 further comprising measuring a property of radiation transmitted through the window, and changing process conditions in relation to the measured property of the transmitted radiation.